Docket No.: 12810-00072-US
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Helmut Winterling et al.

Application No.: 10/531,225 Confirmation No.: 4572

Filed: April 13, 2005 Art Unit: 1796

For: POLYAMIDES Examiner: G. Listvoyb

APPEAL BRIEF

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

As required under § 41.37(a), this brief is filed within two months of the Notice of Appeal filed in this case on December 23, 2009, and is in furtherance of the Notice of Appeal.

The fees required under § 41.20(b)(2) are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This brief contains items under the following headings as required by 37 C.F.R. § 41.37 and M.P.E.P. § 1205.2:

I.	Real Party In Interest
II	Related Appeals and Interferences
III.	Status of Claims
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V.	Summary of Claimed Subject Matter
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I. REAL PARTY IN INTEREST

The real party in interest for this appeal is:

BASF Aktiengesellschaft (BASF SE) of Ludwigshafen, Germany

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

A. Total Number of Claims in Application

There are 15 claims pending in application.

B. Current Status of Claims

1. Claims canceled: 2, 4 and 10
2. Claims withdrawn from consideration but not canceled: 0
3. Claims pending: 1, 3 and 5-18
4. Claims allowed: 0
5. Claims rejected: 1, 3 and 5-18

C. Claims On Appeal

The claims on appeal are claims 1, 3 and 5-18.

IV. STATUS OF AMENDMENTS

Appellant did not file an Amendment After Final Rejection. A Preliminary Amendment was filed on April 13, 2005. The claims appealed herein are the claims of record and considered in the Amendment filed on June 10, 2009 in reply to the Non-Final Office Action and the Final Office Action of September 23, 2009.

VI. SUMMARY OF CLAIMED SUBJECT MATTER

The claimed subject matter relates to a polyamide comprising a compound which includes at least one hydroxy group and has chemical bonding by way of an amide group to the end of the polymer chain, in which the at least one hydroxy group is a linear, unbranched alkanemonocarboxylic acid which includes at least one terminal hydroxy group. The at least one hydroxy group is present in the range from 0.001 to 2 mol%, based on 1 mole of amide groups of the polyamide, and the unbranched alkanemonocarboxylic acid has the formula HO - $(CH_2)_n$ - COOH, in which n = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15. The claimed subject matter further relates to a process for preparing the polyamide, and to fibers, films, and moldings that include the polyamide.

The independent claim involved in the Appeal is discussed at page 1, lines 5-10, page 7, line 13 to page 8, line 1, and Examples 1-3 on pages 9-10 of the specification.

VII. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. A rejection for review on Appeal is of claims 1, 3, 7-9, 11-16 rejected under 35 U.S.C. § 103(a) as obvious over Hoyt et al. (EP 0409093) ("Hoyt"), as evidenced by Lombardi et al. (US Patent No. 3,663,511) ("Lombardi").

B. A rejection for review on appeal is of claims 5-6 and 17-18 rejected under 35 U.S.C. § 103(a) as obvious over Hoyt in view of Brubaker (US Patent No. 2,264,298) ("Brubaker"), as evidenced by Lombardi.

VIII. ARGUMENT

The claimed polyamide is not *prima facie* obvious over Hoyt evidenced by Lombardi, or Hoyt in view of Brubaker and evidenced by Lombardi. An obviousness analysis under 35 U.S.C. § 103 requires, *inter alia,* consideration of the differences between prior art references and the claims at issue. *See KSR International Co. v. Teleflex Inc.,* 127 S.Ct. 1727 (2007) ("*KSR*") (citing *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17-18, 86 S.Ct. 684 (1966) ("*Graham*") (describing factors that control an obviousness inquiry). In *Graham*, the U.S. Supreme Court ("Court") set forth the framework for applying the statutory language of 35 U.S.C. § 103, and in *KSR* the Court determined that the *Graham* factors were still useful and

provided "helpful insight" to an obviousness inquiry. *KSR*, 127 S. Ct. at 1741. The Court further indicated that a "teaching, suggestion, motivation" to combine need not be explicit in every case. *Id.*

However, in making its obviousness determination, the Court indicated the importance of identifying a "reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does." *Takeda Chem. Indus., v. Alphapharm Pty. Ltd.*, 492 F.3d 1350, 1356-57 (Fed. Cir. 2007) ("*Takeda*") (quoting *KSR*, 127 S. Ct. at 1731). In the chemical case *Takeda,* the U.S. Court of Appeals for the Federal Circuit ("Federal Circuit") concurred with the Court's reasoning by also emphasizing that "it remains necessary to identify some reason that would have led a chemist to modify a known compound in a particular manner to establish *prima facie* obviousness of a new claimed compound." 492 F.3d at 1350; *see also Ex parte Martin Haubner and Rolf Pinkos*, Appeal No. 2009-0449 (explaining that "in rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a case of *prima facie* obviousness," and finding that the claims were not obvious over the cited combination of references).

In the present case, the Office has not demonstrated that the cited references describe or suggest the claimed polyamide comprising a compound with the specific combination of components, in light of the differences between the cited references and the claimed composition; or articulated a reason that one skilled in the art would have been led to combine the references to achieve the claimed composition.

A. The Disclosures of Hoyt and Lombardi Do Not Describe or Suggest the Claimed Polyamide

The differences between the cited references and the claimed polyamide are very apparent. For instance, in the claimed polyamide, discussed *supra*, comprises a compound which includes at least one hydroxy group and has chemical bonding by way of an amide group to the end of the polymer chain, wherein the compound which includes at least one hydroxy group is a linear, unbranched alkanemonocarboxylic acid which includes at least one terminal hydroxy group, wherein the compound which includes at least one hydroxy group is present in the range from 0.001 to 2 mol%, based on 1 mole of amide groups of the polyamide, and

wherein the unbranched alkanemonocarboxylic acid has the formula HO - $(CH_2)_n$ - COOH, wherein n = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15. *See* present claim 1.

A polyamide of the claimed invention, which when compared with polyamides chain-regulated by conventional methods, has higher melt volume flow rate to EN ISO 1133 while the relative viscosity determined to DIN 51562-1 to -4, remains the same. *See* page 1, lines 32-40 of the present specification. For instance, the reaction of the polyamide with the alkanemonocarboxylic acid generates water and this liberation of water maintains or increases the melt volume rate of the claimed polyamide.

As acknowledged by the Office, "Hoyt does not teach a linear, unbranched alkanemonocarboxylic acid. Instead, [Hoyt] teaches epsilon-caprolactone as a source of hydroxyl groups . . . Hoyt [also] does not clearly disclose a mechanism of forming the above Hydroxyl groups from the lactone." Final Office Action dated September 23, 2009 at page 3, lines 1-5. (Emphasis added). The Office also alleges that "the structures of the resulting polymer of the reference and Application examined are identical." *Id.*

However, Appellants assert that Hoyt merely describes a polyamide fiber having reduced amio end groups. Hoyt et al. utilizes cyclic caprolactones to reduce the amino end groups on the polymer. In contrast, the claimed polyamide uses open chain amino-hydroxy compounds or carboxyl-hydroxy compounds to reduce the amino end groups on the polymer, such that they react faster than the lactones. *See* Amendment/Response filed June 10, 2009 at pages 5-6.

Another difference between Hoyt and the claimed invention is that the amino-hydroxy compounds or carboxyl-hydroxy compounds split off water, contrary to the lactones. *See* the chemical reaction cited on page 3 of the Response filed June 24, 2008. By liberating water, the descent of the melt volume rate is reduced. The polyamide prepared according to Hoyt produces no water.

Indeed, when Hoyt is considered in its entirety, there is no description or suggestion of all of the above-described components of the claimed polyamide, or any such mechanism to prepare such a polyamid. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984) (indicating that prior art references must be considered in their entirely, as a whole, including any disclosures that lead away from the claims at issue).

Regarding Lombardi, the Office has relied on the reference as evidence "that during the reaction of hexamethylenediamine and epsilon-caprolactone or hydroxycaproic acid (see Example 2), the amide bond forms between amine and acid (see Column 5, line 10)," the "Hydroxyl group stays unreacted (see Example 2)," and "Lombardi teaches 6-Hydroxycaproic acid is equivalent to epsilon-caprolactone in amino-group blocking reaction (see Column 4, line 65)." Final Office Action dated September 23, 2009 at page 3, lines 6-10.

However, Appellants point out such evidence fails to support or cure the deficiencies of Hoyt, since there is no showing in Lombardi of maintaining or increasing the melt volume rate, or producing water as a by product. In fact, as understood by one of ordinary skill in the art, the use of epsilon-caprolactone is clearly not equivalent to 6-Hydroxycaproic acid.

B. One Skilled in the Art Would Not Have Been Led to Achieve the Claimed Polyamide

The Office has not shown a reason why one skilled in the art would even consider modifying Hoyt with Brubaker, much less having been led to do so.

As admitted by the Office, Hoyt nor Lombardi describe no methods or mechanisms of "preparing hydroxyl-capped polyamide. Instead, Hoyt teaches a reaction of polyamide with hydroxyl-containing compound." Final Office Action dated September 23, 2009 at page 5, lines 5-6. The Office alleges that Brubaker's method has advantages and that "it would have been obvious to a person of ordinary [skill] in the art to include caprolactone or hydroxycaproic acid in the synthesis of Hoyt's polyamide in order to obtain more economical one-step process and optimize molecular weight of the polyamide." *Id.* at page 5, line 16 to page 6, line 2.

However, Appellant asserts, as pointed out in Appellant's Pre-Appeal Request for Review filed December 26, 2007, the reference merely describes polyamides which are formed with a polyamide-forming composition in the presence of a hydroxyamine. In Brubaker, the amine moiety of the hydroxyl amine reacts with a carboxylate moiety in the polyamide formed. This reaction sequence, as provided in the Request, is illustrated as follows:

Polyamide-C(O)-OH + H_2N-R-OH $\rightarrow$

Polyamide-C(O)-NH-R-OH
(Brubaker)

In Brubaker, the chemical bonding to the polymer is by way of a carboxylate group. In contrast, the chemical bonding of the claimed polyamide and disclosure of the present specification is by way of an amide to the end of the polymer chain. This reaction sequence is illustrated as follows:

Polyamide-NH_2 + HO-C(O)-R-OH $\rightarrow$

Polyamide-NH-C(O)-R-OH
(Disclosure)

As such, the disclosure of the present specification and Brubaker provide completely different chemical structures on the polyamide, and thus clearly one not rely on the method as a way to piece together and reconstruct the claimed polyamide or any preparation thereof.

Accordingly, in view of the above remarks and reasons explaining the patentable distinctness of the presently appealed claims over the prior art, Applicants request that the pending 35 U.S.C. § 103(a) rejections be reversed.

IX. CLAIMS

A copy of the claims involved in the present appeal is attached hereto as Appendix A. As indicated above, the claims in Appendix A include the amendments filed by Appellant on June 10, 2009.

IX. EVIDENCE

No evidence pursuant to §§ 1.130, 1.131, or 1.132 or entered by or relied upon by the Examiner is being submitted.

X. RELATED PROCEEDINGS

None.

If any fees are due with the filing of this appeal which were not submitted, please charge our Deposit Account No. 03-2275, under Order No. 12810-00072-US from which the undersigned is authorized to draw

Dated: February 23, 2010

Respectfully submitted,

Electronic signature: /Bryant L. Young/
Bryant L. Young
Registration No.: 49,073
CONNOLLY BOVE LODGE & HUTZ LLP
1875 Eye Street, NW
Suite 1100
Washington, DC 20006
(202) 331-7111
(202) 293-6229 (Fax)
Attorney for Applicant

APPENDIX A

Claims Involved in the Appeal of Application Serial No. 10/531,225

1. (Previously presented) A polyamide comprising a compound which includes at least one hydroxy group and has chemical bonding by way of an amide group to the end of the polymer chain,

wherein the compound which includes at least one hydroxy group is a linear, unbranched alkanemonocarboxylic acid which includes at least one terminal hydroxy group,

wherein the compound which includes at least one hydroxy group is present in the range from 0.001 to 2 mol%, based on 1 mole of amide groups of the polyamide, and

wherein the unbranched alkanemonocarboxylic acid has the formula HO - $(CH_2)_n$ - COOH, wherein n = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15.

2. (Cancelled).

3. (Previously Presented) The polyamide as claimed in claim 1, where the unbranched monocarboxylic acid has the formula HO - $(CH_2)_5$ - COOH.

4. (Cancelled).

5. (Previously Presently) A process for preparing the polyamide as claimed in claim 1 comprising providing monomers suitable for forming a polyamide and a linear, unbranched alkanemonocarboxylic acid which includes at least one terminal hydroxy group, and polymerizing the monomers in the presence of the unbranched alkanemonocarboxylic acid.

6. (Previously Presented) A process for preparing the polyamide as claimed in claim 1 comprising, providing oligomers suitable for forming a polyamide and a linear, unbranched alkanemonocarboxylic acid which includes at least one terminal hydroxy group, and polymerizing the oligomers in the presence of the unbranched alkanemonocarobxylic acid.

7. (Previously Presented) A fiber comprising the polyamide as claimed in claim 1.

8. (Previously Presented) A film comprising the polyamide of claim 1.

9. (Previously Presented) A molding comprising the polyamide of claim 1.

10. (Cancelled).

11. (Previously Presented) The polyamide as claimed in claim 1 that is end-capped with an unbranched C_1-C_{15} alkane with at least one terminal hydroxyl group.

12. (Previously Presented) The polyamide of claim 11 where the unbranched alkane is an attached n-pentanol.

13. (Previously Presented) The polyamide as claimed in claim 1 comprising monomeric or oligomeric units of an arylaliphatic lactam or aliphatic lactam, where the polyamide is end-capped with an unbranched C_1-C_{15} alkane with at least one terminal hydroxyl group.

14. (Previously Presented) The polyamide of claim 13 where the monomeric or oligomeric units are selected from the group consisting of enantholactam, undecanolactam, dodecanolactam and caprolactam.

15. (Previously Presented) The polyamide of claim 13 where the monomeric or oligomeric units are based on caprolactam and the polyamide is end-capped by the reaction of 6-hydroxycaproic acid.

16. (Previously Presented) The polyamide of claim 15 in combination with an inorganic or organic pigment.

17. (Previously Presented) The polyamide as claimed in claim 1 prepared by a process comprising:

providing monomers or oligomers selected from an arylaliphatic or aliphatic lactam, aminocarboxylic acids or aminocarbonitriles;

providing an unbranched alkanemonocarboxylic acid having at least one terminal hydroxyl group; and

polymerizing the monomer or the oligomers in the presence of the unbranched alkanemonocarboxylic acid to provide a polyamide that is end-capped with an unbranched alkane having at least one terminal hydroxyl group.

18. (Previously Presented) The polyamide of claim 17 where the monomeric or oligomeric units are based on caprolactam and the alkanemonocarboxylic acid is 6-hydroxycaproic acid.

APPENDIX B

No evidence pursuant to §§ 1.130, 1.131, or 1.132 or entered by or relied upon by the examiner is being submitted.

APPENDIX C

No related proceedings are referenced in II. above, hence copies of decisions in related proceedings are not provided.